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Assuring Access to Space: The Partnership Continues

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A History of Partnership

In the November 2006 edition of *High Frontier*, the National Reconnaissance Office (NRO), Office of Space Launch (OSL) authored an article titled “The Power of Partnership—Assuring Access to Space.” That article described the decades old collaboration between the Air Force and the NRO that enabled the US to place critical national security satellites safely, efficiently, and accurately into space. This partnership has allowed the Air Force and the NRO to leverage both organizations’ strengths without duplication and create an unparalleled focus on mission success. This partnership continues to be strong today. For instance, the NRO funds half of The Aerospace Corporation Federally Funded Research and Development Center technical resources used by the Space and Missile Systems Center Launch and Range Systems Wing. This commitment benefits both the Air Force and the NRO, and ensures that we can bring the appropriate amount of The Aerospace Corporation expertise to bear for launch system analysis. The Air Force-NRO relationship has worked exceptionally well since the late 1990s following three Titan IV failures in 1998 and 1999. Since then, the Air Force and NRO working together have launched 42 consecutive missions successfully, including the last of the legacy Atlas IIAS, Atlas IIIB, and Titan IV systems. The success of this partnership continues into the evolved expendable launch vehicle (EELV) era with all 13 Air Force and NRO Delta IV and Atlas V missions launched successfully to date. The Air Force and NRO continue to strengthen their partnership by bringing to bear the unique capabilities of each organization.



Figure 1. NROL-24 ready for launch at Space Launch Complex-41, Cape Canaveral AFS, Florida, December 2007.

The remainder of this article will address the NRO’s “other” space launch partner—the National Aeronautics and Space Administration (NASA). Indeed, the Air Force, NRO, and NASA have been working together to access space since the late 1970s when the Space Shuttle was designated the primary means of deploying US government payloads into space. Exceptionally close coordination was the order of the day as Air Force, NRO, and NASA personnel worked together in planning the integration and deployment of very complex spacecraft. This spirit of cooperation has remained strong even after the transition back to expendable launch vehicles following the loss of space shuttle *Challenger* in 1986.

Perhaps nowhere was this cooperation more evident than in the launch campaign for NRO Launch-24 (NROL-24) in December 2007 at Cape Canaveral Air Force Station, Florida. NROL-24 was scheduled to launch from Space Launch Complex-41 (SLC-41) on 10 December and the Air Force and NRO took all the steps required to meet that date. Also progressing toward launch during this time was Space Shuttle *Atlantis* carrying the European Space Agency’s Columbus Laboratory, the first European component to be delivered to the International Space Station (ISS), a critical milestone in completing the ISS and one that NASA and the European space community had awaited for over a decade. *Atlantis*’ earliest opportunity to launch was 6 December and, due to ISS power and temperature issues related to the ISS orbit, *Atlantis*’ launch window was to close on 13 December. When it became apparent that these two missions might conflict, the NRO director and NASA administrator mutually agreed that *Atlantis* should have the eastern range priority through the end of the shuttle’s launch window, even if this delayed the launch of NROL-24 by several days. Even so, NRO and Air Force Space Command’s 45th Space Wing launch crews continued progressing to a 10 December launch, staying poised in case the shuttle experienced a delay. The plan for NROL-24 was to reach maximum readiness, and stay “in the tube” until *Atlantis* either launched or was scrubbed. This minimized the downtime between launches and maximized NROL-24’s probability of launching before the holidays.

In preparing for the 6 December shuttle launch, NASA engineers discovered a problem with low-level hydrogen fuel sensors, delaying the launch until at least 8 December—two days prior to the scheduled NROL-24 launch. Coordination among NRO, NASA, and the 45th Space Wing kept both on track. Should NASA engineers determine to stand down *Atlantis*, the Air Force and NRO would be notified immediately and all efforts would be refocused on launching NROL-24. *Atlantis* was again delayed from 8 December to 9 December, making a 10 December launch of NROL-24 seem almost impossible given the necessity to reconfigure the eastern range from the shuttle to the Atlas V. On 9 December, as NASA was once again attempting to launch *Atlantis*, the three mission partners leaned forward to go as far as

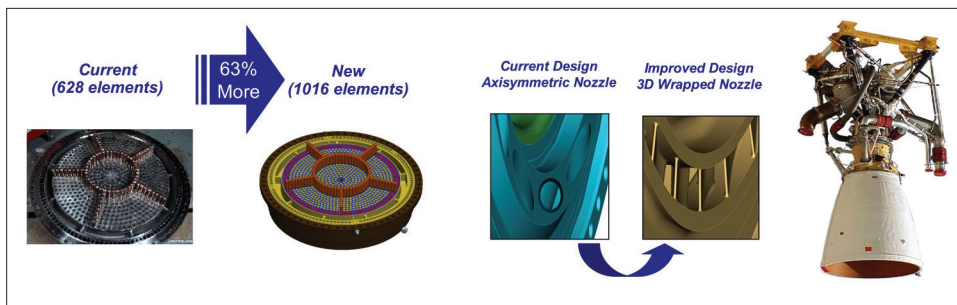


Figure 2. The Delta IV RS-68 main engine upgrade. Data from the NRO-funded upgrade will be shared with the Air Force and NASA.

possible to keep the NROL-24 launch on track for 10 December, should NASA scrub on 9 December, but without precluding another *Atlantis* attempt on 10 December.

At approximately 0930 Eastern Standard Time (EST) on 9 December, NASA made the decision to postpone the *Atlantis* launch to January 2008, due to continuing unresolved issues with the fuel sensors, and immediately notified the Air Force and the NRO. Because of the exceptionally close coordination among NRO, NASA, the 45th Operations Group, and United Launch Alliance—the EELV launch service provider—an all-out effort was initiated to attempt a launch of NROL-24 in about 32 hours. One critical element of this extremely aggressive plan was preparing to roll NROL-24 from the Vertical Integration Facility (VIF) to SLC-41 as soon as possible in the event of an *Atlantis* scrub. Within 45 minutes of NASA's decision to stand down the shuttle, the Atlas V carrying the NROL-24 payload left the VIF and rolled to SLC-41. Due to pre-coordination, the eastern range reconfiguration was accomplished in one-third the normal time. Remaining procedures leading to launch day proceeded smoothly, albeit urgently.

At 1705 EST on 10 December, all the hard work and cooperation was rewarded with a flawless launch at the opening of the window. This extraordinary achievement would not have been possible without the exceptionally close coordination, planning, dedication, and true teamwork that can only come from a strong trusting relationship among mission partners.

Another significant example of partnership and shared mission goals is the Delta IV heavy lift upgrade program currently underway. NRO mission requirements demanded more performance than the Delta IV heavy lift vehicle (HLV) currently provides. The main effort focuses on upgrading the Delta IV's main engine, the RS-68, to a more powerful RS-68A. The NRO partnered with the Air Force and NASA to evaluate a plan forward to achieve the necessary performance improvements. These partners determined that there were benefits for all three organizations. The NRO would attain the performance it required. The Air Force (as the EELV program manager) would have the option to make the RS-68A a Delta IV fleet-wide upgrade for all common booster cores, potentially avoiding the cost of using solid rocket strap-on boosters for some future Delta IV missions. NASA would receive all RS-68A program data to enable it to develop another variant—the RS-68B. NASA plans to use five RS-68B engines in the next generation Ares V heavy lift launch vehicle that will serve as the primary means for delivering large-scale equipment to space—from the lunar landing craft and materials for establishing a lunar base—and replenishing food, water, and other staples

needed to extend human presence beyond Earth orbit.

To accomplish this upgrade, the Air Force, NRO, and NASA executed a tripartite agreement to exchange information. This will enable the NRO Delta IV HLV upgrade program to meet its goals and provide a more robust capability for delivering payloads to Earth orbit and beyond.

Conclusion

Assured access to space is critical for US national security. Whether providing a precision navigation capability, conducting reconnaissance activities, or pushing the edge of our scientific knowledge, space plays a critical role that cannot be replaced. The Air Force, NRO, and NASA have partnered for decades to safely, efficiently, and reliably provide the gateway to space for the nation.

That partnership continues.



Col John G. Stizza (BS, US Air Force Academy [USFA]) is director, Office of Space Launch at the National Reconnaissance Office (NRO), Chantilly, Virginia. He is responsible for successful delivery of every NRO satellite on orbit, on time.

After graduation from the USAFA in 1983, Colonel Stizza's first assignment was Wright-Patterson AFB, Ohio, as an F-16 flight simulator systems engineer. He was responsible for designing, testing, and delivering flight trainers to US and allied Air Forces around the globe. In 1988, he was assigned to the western Space and Missile Center, Vandenberg AFB, California, supporting classified payload integration to ground support launch facilities. In 1991, he became the lead systems engineer for Space Launch Complex 40, overseeing the demolition and rebuild of the \$450 million launch complex to accommodate the nation's largest expendable booster, the Titan IV. In 1993, he transferred to the 45th Space Wing, Cape Canaveral AS, Florida, where he completed tours as a Titan IV launch controller, Delta II maintenance officer and 45th Space Wing chief of standardization and evaluation. During this time, he was a certified crew member on four Titan IV launches and nine Delta II launches. In 1997, Colonel Stizza moved to NRO Headquarters (HQ), in the Office of Space Launch, acquiring launch services for NRO systems. He then moved to the NRO Office of Legislative Liaison where he provided the interface between the US Congress and NRO programs, eventually assuming the role of deputy director, legislative liaison. Colonel Stizza then assumed command of the NRO Operations Squadron, Schriever AFB, Colorado, in December 2000. His unit provided telemetry acquisition and relay for all NRO launches and all evolved expendable launch vehicle (EELV) launches for Air Force Space Command (AFSPC). They also executed 175+ daily NRO satellite contacts in support of intelligence gathering operations worldwide. He then moved to the staff at HQ AFSPC managing efforts to maintain the nation's launch ranges and satellite control networks while also managing procurement of the next-generation launch vehicle—EELV. In 2005, Colonel Stizza returned to the NRO at Los Angeles AFB, California, where he took on duties as the deputy director for the Office of Space Launch.